Occupational-health training at the University of Hawaii

Arthur M. Kodama, PhD*
Harlan H. Hashimoto, DEnv**
Julius Morris, PhD***

Occupational-health training at the University of Hawaii School of Public Health (UH-SPH) is a graduate-level program focusing on industrial hygiene; it also offers courses of interest to other health professionals, particularly physicians and nurses. The current training at the UH-SPH is designed primarily to prepare occupational-health practitioners at the master's degree level. The occupational-health program elective is considered to be an area of emphasis within a broader program of study in public health. The program offers special opportunities for occupational-health training and research in cross-cultural and international settings. Post-graduate and continuing-education occupational-health training in the community is also discussed.

Occupational-health training at the University of Hawaii has its primary locus at the School of Public Health on the Manoa campus. There is no baccalaureate degree program in occupational-health at the University, but an Associate of Arts degree in Occupational Safety and Health may be obtained from the Honolulu Community College in the University of Hawaii system.

Occupational-health training is a graduate level program. The program enrolls many physicians and nurses interested in public health who have clearly defined goals in pursuing occupational medicine or occupational-health nursing careers. Although the UH-SPH does not offer formal degrees in either specialization, the occupational-health program is often used as a vehicle to fulfill certain of the certification requirements in those respective fields. For example, some of our students are Preventive Medicine Residency physicians doing their Master of Public Health (MPH) year (PGY-2) with an emphasis on occupational health. Subsequent completion of their practicum year (PGY-3) and enrollment in short-courses in clinical occupational medicine qualify them to sit for the general preventive medicine and occupational medicine boards. Similarly, a MPH degree in occupational-health facilitates certification in occupational-health nursing.

The current training at the UH-SPH is designed primarily to prepare occupational-health practitioners at the master's degree level. The occupational-health program elective includes training in environmental health as well, and is considered to be an area of emphasis within a broader program of study in public health. The intention is to prepare practitioners to have fundamental knowledge and skills in occupational health, but to also have the capacity to deal with environmental health problems and the broader issues of public health. At the master's level, training at the UH-SPH leads to either the MPH degree or the Master of Science (MS). Training requires between 1 and 2 academic years with the intervening summer devoted either to fieldwork (for MPH) or research (for MS). Minimum requirements for a degree include 30 semester hours of course work, although a typical work load is closer to 36 semester hours.

All students in the UH-SPH are required to take certain foundation (core) courses. The balance of a student's program of study is individualized according to interests and needs and is filled-in from a fairly large course-selection menu (see Table 1).

In addition to the master's level programs, the UH-SPH also has a relatively new, school-wide, Doctor of Public Health (DrPH) program. Several recent graduates of that program have earned their doctoral degrees with an emphasis in occupational-health.

The core faculty primarily responsible for the occupational-health training program at the UH-SPH is relatively small. However, in order to provide the broadly based curriculum shown in Table 1, the total number in the faculty who contribute to the program is large. In addition, the program also depends heavily on a group of clinical and adjunct faculty from other units of the University, as well as members of the community who contribute to the instruction and field supervision of our students. These "volunteer" faculty members

* University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822
** University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822
*** University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822

Address correspondence to:
Dr. Arthur M. Kodama
University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822

Table 1: Course selections in the MPH curriculum with an emphasis on occupational health.

Foundation (Core) Courses:

PH 623	Social Science and Public Health
PH 642	Health and Human Development
PH 654	Public Health Statistics
PH 663	Principles of Epidemiology
PH 788	Seminar in Environmental Health
PH 791	Advanced Public Health Practice (Fieldwork)

Occupational-Health Courses:

PH 683	Occupational Health
PH 684	Principles of Industrial Hygiene
PH 687	Environmental Toxicology
PH 691	Occupational Safety
PH 692	Industrial Hygiene Engineering
PH 695	Ergonomics
PH 699	Directed Readings in Occupational Health
PH 700	Environmental Epidemiology
PH 773	Measurement of Environmental Factors (Lab)
PH 797	Seminar in Occupational Medicine

Other Recommended Courses:

PH 658	Computer Applications in Public Health
PH 664	Advanced Epidemiology
PH 665	Epidemiology of Chronic Diseases
PH 688	Environmental Health in Developing Countries
PH 693	Risk Assessment
PH 694	Hazardous Materials Management
PH 792	Injury Epidemiology

provide "real world" expertise and add great strength to the program.

A distinctive feature of occupational-health training at the University of Hawaii is the central role played by the UH-SPH in the Asia-Pacific Academic Consortium for Public Health. The Consortium is comprised of schools and faculties of public health from Thailand, Indonesia, Taiwan, the Philippines, Malaysia, Bangladesh, Singapore, Nepal, the Socialist Republic of Viet Nam, the People's Republic of China, Sri Lanka, Korea and Japan. The mission of the Consortium includes the collaboration among the academic institutions of public health in Asia and the Pacific Basin in training and research. An occupational-health student interested in international and cross-cultural aspects of occupational-health may utilize consortium linkages to arrange for special training and research opportunities.

Since 1978, the UH-SPH has had an Occupational-health Training Grant from the National Institute for Occupational Safety and Health (NIOSH). During this period, the School has graduated 70 to 75 students with an emphasis in occupational health. Approximately 53% of the graduates have taken positions in Hawaii, 34% on the mainland U.S. and the remainder have returned to their home countries in the Asia-Pacific region.

International[1], national[2] and Hawaii/Pacific Basin[3] surveys all indicate an urgent need for more training and manpower development in occupational-health. Furthermore, continuing-education needs are evident everywhere for the benefit of practitioners already in the field. For example, the Bureau of Health Professions of the U.S. Public Health Service in a 1988 study[2] reported that of the currently practicing occupational-medicine physicians and occupational-health nurses, the majority needed additional training.

Although the Occupational-Health Training Program at the UH-SPH is primarily a formal, graduate level, academic degree program, we also recognize a programmatic and institutional obligation to provide continuing education and to do a certain amount of outreach to the community as well as to other units within the university.

Workshops and seminars have been presented within the community, and some of our regular occupational-health courses are offered in the late afternoon and evening hours in order to enable full-time workers to continue their education.

Within the University, an attempt is being made to encourage the incorporation of occupational-health and safety into the curricula of the College of Business Administration and the College of Engineering, since it is the business managers who can make the decisions, and the engineers who can design the workplaces of tomorrow with appropriate considerations on behalf of health and safety.

Much more needs to be done in the way of outreach. The School continues to seek additional resources to enlarge on this effort.

A variety of continuing-education opportunities and special training courses related to occupational-health are available to health professionals in the community from other sources. Local chapters of organizations such as the American Industrial Hygiene Association, American Society of Safety Engineers, Occupational-health Nurses, etc., as well as State and federal departments present, sponsor, or import training programs in specific health and safety subject areas. Topics in Occupational medicine are increasingly a part of regular educational staff meetings and grand rounds in local hospitals. Organizations such as Chart Rehabilitation of Hawaii, Inc. offer public workshops on occupation-related injuries and disorders.

An exciting new development in physician training is a program being developed by the Hawaii State Department of Health (DoH) as part of an anticipated new law requiring all physicians to report selected occupational illnesses and injuries. The DoH will be mailing informational materials periodically to all physicians in the State to call attention to occupational-health problems. The Hawaii Medical Association has recently organized a Speakers Bureau, including some occupational-medicine specialists, who will present lectures and workshops on the diagnosis and treatment of occupational diseases.

The growing importance of occupational-health is underscored by the health objectives stemming from the U.S. Public Health Service reports, "Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention,"[4] and "Promoting Health/Preventing Disease: Objectives for the Nation."[5]. Of the 226 objectives delineated to fulfill the purposes of the reports by 1990, 20 were in the area of occupational health.

The 1985 Governor's Conference on Health Promotion and Disease Prevention[6] adopted nearly identical objectives for the

(Continued on page 99) ▶

physical examination, complete blood count, chest roentgenogram and possibly exercise pulmonary function testing for hypoxic and hypercapneic drives.

g. Because of possible effects of hypoxemia on the fetus, if you are pregnant you should not ascend above 3,000 meters.

h. If you become ill at modest altitudes, a complete appraisal should be done at that point and further exposure to higher altitudes limited.

Conclusion

Rapid exposure to moderate (3,000 meters) and high (5,000 meters) altitudes is uncomfortable for most people and life-threatening for some. With a knowledge of the physiologic principles of adaptation to high altitude and understanding of the signs and symptoms of diseases associated with such exposure, the physician and the traveler will be able to prevent both serious illness and death.

REFERENCES

1. Hackett PH, Rennie D, Levine HD: The incidence, importance, and prophylaxsis of acute mountain sickness. *Lancet* 1976 Nov 27; 2:1140-1154.
2. Hultgren HN, Marticorena EA: High altitude pulmonary edema. *Chest* 1978 Oct, 74:372-376.
3. Singh I, Khanna PL, Srivastava, MD, et al: Acute mountain sickness. *N Engl J Med* 1969 Jan 23; 280:175-184.
4. Severinghaus JS: Transarterial Leakage: A Possible Mechanism of High Altitude Pulmonary Edema. High altitude physiology: cardiac and respiratory aspects. A CIBA Foundation Symposium. Edinburg: Churchill Livingstone. R. Porter and J. Knight, 1971, p. 61.
5. Hultgren HN: High Altitude Medical Problems, chap 29, Hypoxia: man at altitude. Thieme-Stratton, Inc., R. Sutton, N. L. Jones, and C. S. Haustom, 1982, pp 161-167.

■

OCCUPATIONAL HEALTH TRAINING *(Continued from page 87)*

State of Hawaii. In order to achieve these key health objectives, a large number of occupational-health professionals will be needed. The University of Hawaii School of Public Health expects to play an important role in their training.

REFERENCES

1. Phoon WO, Ong CN, Editors. Occupational health in Developing Countries of Asia. Tokyo: Southeast Asian Medical Information Center, 1985.
2. U.S. Department of Health & Human Services. Evaluating the Environmental Health Work Force. Rockville: Bureau of Health Professionals, 1988.
3. University of Hawaii School of Public Health, Needs Assessment Surveys for Industrial Hygienists, Occupational Medicine Physicians, Occupational Health Nurses and Safety Professionals for the State of Hawaii and U.S.-related Pacific Jurisdictions. Honolulu: School of Public Health Occupational Health Program, 1989.
4. U.S. Department of Health & Human Services. Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention. Washington, D.C.: U.S. Government Printing Office, 1979.
5. U.S. Department of Health & Human Services. Promoting Health/Preventing Disease: Objectives for the Nation. Washington, D.C.: U.S. Government Printing Office, 1980.
6. Hawaii State Department of Health. The Proceedings of the Governor's Conference on Health Promotion & Disease Prevention. Objectives for 1990 and Beyond. Honolulu: Department of Health, 1986.

■

ENVIRONMENTAL EPIDEMIOLOGY *(Continued from page 81)*

dence of 1 in 1,000, a study population of 10,000 is required. The risk of having any cancer per year is 3-4 per 1,000 population. The incidence of having a particular cancer is much lower and the study group required must be much larger.

Other criteria for causality have to be considered, especially biologic plausibility. Toxicologic data from studies of cell cultures or in animals often supply information which cannot be duplicated in human studies because it is impossible to expose the latter to experimental doses of toxic agents. Caution is advised, therefore, when so-called plausibility is used as a substitute for detailed information.

What seems "reasonable" in regards to causality is not necessarily true. Even though environmental epidemiology has made very valuable contributions to our knowledge of environmental hazards, the results reported in every study should be critically evaluated, keeping in mind the difficulties inherent in their methodology.

BIBLIOGRAPHY

Center for Environmental Epidemiology, University of Pittsburgh and U.S. Environmental Protection Agency. First International Symposium on Environmental Epidemiology. *Archives of Environmental Health* Vol. 43:69-204, 1988.

Fox, J.P., Hall, C.E. and L.R. Elveback Epidemiology: Man and Disease. Macmillan, New York, 1970.

Goldsmith, John R. Environmental Epidemiology: Epidemiological Investigation of Community Environmental Health Problems CRC Press, Boca Raton, Florida, 1986.

Kopfler, Frederick C. and Gunther F. Craun: Environmental Epidemiology. Lewis Publishers, Chelsea, Michigan, 1986.

U.S. Dep. of Health and Human Services. Second Annual Symposium on Environmental Epidemiology. Environmental Health Perspectives Vol. 52:1-160, 1983.

■